Elementary Number Theory, by Edmund Landau, translated by Jacob E. Goodman; with exercises by Paul T. Bateman and Eugene E. Kohlbecker. Chelsea Publishing Company, 1958. 256 pages. $4.95.

From the Publisher's Preface: 'Professor Landau gave a six-semester course on Number Theory at the University of Göttingen which was published in three volumes as "Vorlesungen über Zahlentheorie" (Leipzig, 1927) each volume being in two sections. The titles of these six sections are "Aus der elementaren Zahlentheorie" and "Aus der additiven Zahlentheorie" (Vol.I), "Aus der analytischen Zahlentheorie" and "Aus der geometrischen Zahlentheorie" (Vol.II), "Aus der algebraischen Zahlentheorie" and "Über die Fermatsche Vermutung" (Vol.III). The present work is a translation of "Elementare Zahlentheorie". The book is well known to mathematicians in its earlier German editions (one of them in America, 1947); a new review and recommendation is therefore deemed to be unnecessary.

H.S.

Lectures on Ordinary Differential Equations, by Witold Hurewicz. Published jointly by the Technology Press of the Massachusetts Institute of Technology and John Wiley & Sons, Inc., New York, 1958. xvii+122 pages.

Hurewicz' lecture notes on differential equations first appeared in mimeographed form in 1943 under the title "Ordinary Differential Equations in the Real Domain with Emphasis on Geometric Methods" (Brown University), and were reissued by M.I.T. in 1956. Their appearance in book form is most welcome.

The first chapter presents the basic existence and uniqueness theorems for first-order equations in a single unknown, employing first the Cauchy-Euler approximation method, and secondly the method of successive approximations.

The analysis for systems is carried out in Chapter 2. The third chapter deals with linear systems, and includes a section on Green's function.

Chapter 4, "Singularities of an Autonomous System", and Chapter 5, "Solutions of an Autonomous System in the Large", are especially valuable. The fourth chapter includes a detailed analysis of non-linear systems besides the standard material on linear systems. The chief result of the fifth chapter is the Poincaré-Bendixson theorem on limit cycles. The chapter ends with a discussion of Poincaré's index of a curve, orbital stability of

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limit cycles, and the index of simple singularities.

The book also contains an appreciation of Hurewicz by S. Lefschetz (reprinted from the Bulletin of the American Mathematical Society, 1957) and a brief list of references.

This text provides an excellent basis for a first-year graduate course in ordinary differential equations.

H. Kaufman, McGill University

Multivalent Functions, by W.K. Hayman. Cambridge Tracts in Mathematics and Mathematical Physics, No. 48, Cambridge University Press, 1958. viii + 151 pages. 27 s. 6 d.

In presentation and methods the author follows the pattern established in the theory of univalent (schlicht) functions which now may be termed "classical" (or analytic). Bieberbach, Löwner, Littlewood, Golusin and the author stand out among many contributors to this theory. It is interesting to compare the book under review with the recent monograph by Jenkins (Ergebnisse series) where the "modern" (or geometrical) line which originated with Grötzsch, Teichmüller and Ahlfors is presented.

The author's aims appear to be twofold. First, to present in well-organized form known results from the theory of univalent functions (chapters 1 and 6) and the principle of symmetrization (chapter 4). This material has not appeared in book form in the English language although many accessible references can be found. The remaining three chapters (2, 3, 5) accomplish the second aim - to present in unified form the results in the multivalent case. Multivalency is defined in two average senses: areal mean p-valency and circumferential mean p-valency. For the functions of either classes the author considers the coefficient and the growth problems; his own results in this direction are the best obtained so far, notably the strong asymptotic form of Bieberbach's conjecture for coefficients.

For Canadian mathematicians the latter chapters will evoke the pleasant memories of the Winnipeg seminar in 1955 where the author presented his original work.

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